



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,671	03/10/2004	Steven G. Goebel	GP-303582	4151

7590 06/17/2005

CARY W. BROOKS
General Motors Corporation
Legal Staff, Mail Code 482-C23-B21
P.O. Box 300
Detroit, MI 48265-3000

EXAMINER

BENTON, JASON

ART UNIT	PAPER NUMBER
----------	--------------

3747

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/797,671	Applicant(s) GOEBEL ET AL.	
	Examiner Jason Benton	Art Unit 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3,12-14,25 and 29 is/are rejected.
- 7) ☒ Claim(s) 2,4-11,15,17-24 and 26-28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/10/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 12, 13, 14, 16, 25, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dacus et al. in view of Okawa.

The patent by Dacus et al. (5,211,136) shows a method of managing heat from an engine for a vehicle. An airflow is provided over a surface of a heat exchanger (14, by fan 33) circulating coolant used to cool the engine. The airflow rejects heat from the heat exchanger. Water is sprayed onto the heat exchanger to supplement the cooling capacity of the airflow by evaporative cooling.

The patent by Dacus et al. does not suggest wicking the water over the outside surface of the heat exchanger. The patent by Okawa (4,098,236) shows a heat exchanger (38) in which water is wicked over the surface to assist with heat transfer. In view of Okawa, it would have been obvious to anyone skilled in the art who wanted an evenly dispersed cooling of the heat exchanger (Col. 3, lines 35-50), to improve on Dacus et al. by wicking the water over the heat exchanger.

The water is used to supplement cooling of the heat exchanger under peak power and/or hot day conditions when the cooling capacity of the heat exchanger is not sufficient.

Art Unit: 3747

A thermal management system of an engine for a vehicle with a coolant pump (20). A radiator (14) comprising a wicking mechanism and having an associated fan (33) to provide airflow over the wicking mechanism. A coolant circuit (13) circulates coolant used to cool the engine, said coolant circuit fluidly connecting the engine, the coolant pump, and the radiator. A supply of water (21) is in fluid connection with the spraying mechanism to supplement the cooling capacity of the airflow by evaporative cooling.

The supply of water is used to supplement cooling of the heat exchanger under peak power and/or hot day conditions when the cooling capacity of the heat exchanger is not sufficient.

The wicking mechanism is selected from the group consisting of wicking fibers, wicking felts, wicking polymers, wicking metals, and combinations thereof.

At least a portion of the fluid connection between the supply of water and the wicking mechanism is provided by a pump (20) used to spray the water onto the radiator.

Allowable Subject Matter

Claims 2, 4-11, 15, 17-24, and 26-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Benton whose telephone number is (571) 272-4838. The examiner can normally be reached on flex.

Art Unit: 3747

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Yuen can be reached on (571) 272-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JB


Henry C. Yuen
Supervisory Patent Examiner
Group 3700